REMARKS

Claim Rejections - 35 USC § 102

Claims 1 and 3-6 are rejected under 35 USC § 102(b) his being anticipated by Hollinger (US Pat. No. 3316952).

Prior art is anticipatory only if every element of the claimed invention is disclosed in a single item of prior art in the form literally defined in the claim. Jamesbury Corp. v. Litton Indus. Products, 756 F.2d 1556, 225 USPQ 253 (Fed. Cir. 1985); Atlas Powder Co. v. du Pont, 750 F.2d 1569, 224 USPQ 409 (Fed. Cir. 1984); American Hospital Supply v. Travenol Labs, 745 F.2d 1, 223 USPQ 577 (Fed. Cir. 1984). A rejection for anticipation under 35 USC § 102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference. In re Paulsen, 30 F. 3rd 1475, 1478 (Fed Cir. 1994).

As discussed with the examiner in an interview on February 23rd, 2004, independent claim 1 has been amended to better define the structure of the forged spline and well areas as having greater density. This is supported by the specification at the first paragraph of page 15 and is not believed to constitute new matter.

New claim 20 has also been added further claiming material properties inherent to forged materials, as supported by the Declaration under Rule 132 by inventor Theodore L. Wolf. submitted herewith; specifically, the spline first and second sidewalls and engagement edges and the actuating wall formed with the top end metal grain flow contour structure. As this is an inherent property of forged metal well known in the metal arts, this is not believed to constitute new matter.

The structural importance of these limitations and advantage over prior art lock nuts are thus clearly supported by the specification. Hollinger is silent upon the issue of forging, and offers no teaching on forming his voids or "splines" through methods that result in increased material density.

Additionally, applicants' independent claims 1, 7 and 20 clearly and distinctively claim a threaded body length dimension "about equal" to the thread diameter. The examiner apparently concedes that this limitation is not taught within the written specification or claims of Hollinger,

relying instead upon In re Mraz 173 USPQ 25 (CCPA 1972) to assert that it is nonetheless taught by Hollinger's figures "as a reference for what they show"

However, it is a rule of claim interpretation that the claims are to be construed in light of the specification. Autogiro Co. of America v. United States, 384 F. 2d 391, 155 USPQ 697 (Court of Claims 1967). The significance of the term "about equal" is clearly established by the specification at page 7, lines 10 through 29:

> ***A conventional non-locking nut typically has a thread length roughly equivalent to the thread size.*** *Accordingly, a two-inch thread-nut has two inches of thread length along its central axis.* ***Prior art lock nuts*** (not shown) are typically formed from standard non-lock nuts by creating a locking insert void within the nut body, and the *formation of the void necessarily results in a corresponding* ***loss of thread length***. This shortening of thread length results in a ***reduction in structural strength*** in the nut which, in turn, results in a ***higher rate of nut thread failure*** when compared to a non-locking nut with a conventional (and therefore longer) thread length....
>
> Referring again to Figure 2, one important advantage of ***the present invention*** is that ***the total thread length TL is about equivalent to the thread size W***. This is accomplished by forming the locknut 10 from a nut body with a greater body length than a conventional prior art locknut or non-locking nut. Aperture 16 is formed within a portion of the locknut 10 having an aperture length dimension IL, which results in an overall locknut length BL that is the sum of the thread length TL dimension and the aperture length dimension IL. Accordingly, the locknut 10 has about the same thread strength as a convention non-lock nut, and ***greater thread strength than prior art lock nuts***, which have a diminished thread length dimension.

The structural importance of this claim 1 limitation, its structural advantage over prior art lock nuts, and the meaning of "about equal" with respect to a relationship of the threaded body length and thread diameter dimensions as claimed is thus clearly definite and supported, and is well known and understood within the context of standard nut body and thread sizing correlation within the fastener industry. The apparent assertion of the examiner that the "about equal" term is not sufficiently definite to distinguish the invention of claim 1 from the prior art is believed to be traversed by the clear language of the specification as originally filed, and by the understanding of the terms within the fastener industry, and is thus sufficiently definite.

Additionally, the Declaration under Rule 132 by inventor Theodore L. Wolf submitted herewith further establishes the patentably distinct characteristics of the present invention:

8. Another critical disadvantage of machined lock nuts is the loss of thread length in creating an insert-engaging aperture. Generally a reduction in thread engagement length results in a correspondingly greater reduction in performance strength of a nut, whereas the relationship of reduction in performance strength to reduction in thread engagement length has logarithmic characteristics. Strip tests on Heighberger nuts reveal dramatic strength reductions when thread body length is cut away to form the insert-engaging apertures, resulting in a higher rate of nut thread failure. Thus the standard prior art lock may not meet required strength tolerances for some structural applications, wherein a standard nut of the same hardness with the complete and undiminished thread length does.

9. In order to overcome the above disadvantages, my company sought an improved lock nut with improved strength and insert-engaging characteristics which would enable the use of lock nuts in applications unavailable to the prior art lock nuts. Our research resulted in the present invention - a forged lock nut with a plurality of large well-formed and structurally improved insert engaging teeth and a thread body length equivalent to that of a standard nut.

Hollinger's figures offer **no** teaching on this limitation, and the examiner has not properly applied *Mraz* to assert otherwise. In *Mraz*, a prior art reference illustration was used for teachings regarding an angle value. Scaling is not necessary to convey an angle value, since an angle value illustrated will remain constant regardless of the scale depicted. This is not the case here, and *Mraz* does not support the examiner.

In contrast to the facts in *Mraz*, here the examiner seeks to use Hollinger's figures to teach a definite numeric dimensional relationship, which must be established by unambiguous numeric teachings. These teachings are not present in Holinger. Hollinger's figures *do* teach and convey the importance of the relation of his inner threads diameter ("MAXIMUM MAJOR DIAMETER") with respect to his "insert-retaining well" diameter ("OUTER DIAMETER OF WELL") by illustrating and labeling these limitations. It is readily apparent that he fails to also illustrate and label the dimensions of his *thread body length*. Since he has provided unambiguous illustration for the diameter values, he would also provide the same for the thread body length if he had any cognizance of its importance or teachings thereupon, and he does not. The law is clear that patent drawings are not working drawings. *Mraz*, citing In re Wilson, 312 F2d 449, 50 CCPA 827 (1963). Without providing such an illustration, one cannot find the "about equivalent" limitation as defined by claim 1. Thus, the examiner may not properly impute

scaled measurements to a second different dimension possible within the drawings where not provided by the patentee when it is clear that said patentee recognized the importance of such an illustration by providing it for a first dimension. Moreover, Hollinger's figures are unambiguously inconsistent with respect to thread lengths - *the same nut body 11 is illustrated with two different thread configurations and thus lengths* - five threads long in Figures 2 and 4, and six threads long in Figures 5 and 6.

Thus, it is readily apparent that Hollinger did not realize the significance of thread length for nut body strength in lock nut applications. And his inconsistency in illustrating thread body lengths in his multiple views of the same invention embodiment necessarily defeats an attempt by the examiner to read such a teaching. One can only find its *absence* in the Hollinger reference, not its presence.

Therefore, amended claim 1 and new claim 20 are not properly rejected under 35 USC § 102(b) his being anticipated by Hollinger. As claims 3-6 are dependent upon and include all of the limitations of claim 1, they are, for the same reasons, not properly rejected under 35 USC § 102(b) his being anticipated by Hollinger.

Claim Rejections - 35 USC § 103

Claims 1, 3-7 and 9-19 (some alternatively) are rejected under 35 USC § 103(a) as being unpatentable over Hollinger in view of Wesley (US Pat. No. 2,378,610).

In order for a claimed invention to be rejected on obviousness, the prior art must suggest the modifications sought to be patented. In re Gordon, 221 U.S.P.Q. at 1127; ACS Hospital System, Inc. v. Montefiore Hospital, 221 U.S.P.Q. at 933.

As established above, Hollinger does not teach the structure of the forged spline and well areas as having greater density as claimed in independent claims 1 and 7, the spline first and second sidewalls and engagement edges and the actuating wall formed with the top end metal grain flow contour structure as claimed in claim 20, or the threaded body length dimension about equal to the thread diameter as claimed by claims 1, 7 and 20.

The examiner cites Wesley to modify Hollinger to teach the present invention as claimed. However, as discussed above, Wesley does not teach the longer thread body length. Moreover, as

established by paragraph 10 of the Declaration under Rule 132 by inventor Theodore L. Wolf submitted herewith, Wesley does not teach the forged structures as claimed.

> 10.... Wesley does not teach "forging" as it is understood in the fastener industry: he teaches ***stamping processes*** involving sheet metal stock, and on a much smaller scale. The stamped nuts taught by Wesley are too small for large (two inch and above) fastener applications, and he cannot form the large high tensile fasteners of our invention by stamping them out of sheet metal: sheet metal will not provide the same high strength, and possible size is limited by the stamping process: structurally robust metals such as the ASTM medium carbon steel have lower ductility and flowing properties and are not generally amenable to forming nuts through stamping processes.

Claims 14-19. Moreover, claims 14-19 claim the present invention with specific dimensional limitations not taught by Wesley or Hollinger. Article claim 14 and corresponding method claim 17 claim engagement edges arrayed with a pitch value per inch of between about 10 to about 24. Claims 15 and 18, respectively, further limit the invention claimed to a threaded body length about one-half inch, and claims 17 and 19, respectively, further limit the invention claimed to the threaded body length of about two inches and the pitch value of about 14. None of these limitations are taught by Wesley. Again, as established by paragraph 10 of the Declaration under Rule 132 by inventor Theodore L. Wolf submitted herewith:

> ... The only example Wesley provides has an insert aperture with a 17/64 inch diameter and a 3/32 inch height, the nut bore diameter of 5/32 inch and the entire "nut blank" having a height under 5/16 inch. (As described in his specification at the fourth column, lines 11 through 41.) Wesley's lock nuts are small, lightweight nuts for aircraft applications, produced by stamping sheet metal stock (see the third column, lines 17 to 33), and even then he limits the number of his insert-engaging "projections" to "eight" due to the necessity of avoiding "tool breakage" in engaging the metal blank material and forming the projections. (See his figures and the second column, lines 29-43, and fourth column, lines 11 through 41.) Additionally, it has been my experience that the limited number of projections taught by Wesley does not sufficiently engage a locking insert during application and removal. But most importantly, the Wesley sheet metal stamping processes do not produce the higher tensile lock nut structures with increased spline and wall material density and homogenous grain contour lines formed through forging equivalent to our invention, and Wesley offers no guidance in forming them.

Thus, independent claims 1, 7 and 20, and dependent claims 2-6 and 8-19, are believed to be allowable over 35 USC § 103(a) as being unpatentable over Hollinger in view of Wesley.

Claims 2 and 8 are rejected under 35 USC § 103(a) his being unpatentable over Hollinger as applied to claims 1 and 7, and further in view of Heighberger (US Pat. No. 3938571), wherein Heighberger is "relied upon for the material of the deformable member."

Claim 2 is directly dependent upon claim 1, and claim 8 is directly dependent upon claim 7. Thus, they include all of the limitations of amended claims 1 and 7 and are believed to allowable under 35 USC § 103(a) over Hollinger and further in view of Heighberger for the reasons established above.

Double Patenting

Upon indication of allowable subject matter, applicants will timely file a terminal disclaimer to overcome the examiner's rejection.

In conclusion, all of the claims presently before the examiner are now believed to be in condition for allowance, and early notification thereof is respectfully requested.

Respectfully submitted,

Date: April 21, 2004

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Enclosure